REMARKS

In the last Office Action, claims 1-4 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,579,462 to Barber ("Barber"). Claims 5, 6, 8 and 11-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Barber in view of U.S. Patent No. 6,603,477 to Tittle ("Tittle"). Claims 7, 9 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Barber in view of Tittle and further in view of U.S. Patent No. 4,821,303 to Fawcett ("Fawcett").

By the present response, dependent claim 6 has been canceled without prejudice or admission and claims 1-5 and 7-13 have been amended to more particularly point out and distinctly claim the novel aspects of the present invention.

More specifically, independent claim 1 has been amended to recite that the display screen of the inventive derived data display adjustment system displays a plurality of characteristic curves and a plurality of derived numerical data values calculated from the plurality of characteristic curves, the means for displaying a derived numerical data calculation user interface enables user selection of a derived numerical data calculation process for calculating a derived numerical data value from one of the characteristic curves when the characteristic curve is selected by the user, and the

means for displaying a derived numerical data adjustment user interface enables user adjustment of a display position of a derived numerical data value when the derived numerical data value is selected by the user.

Independent claim 5 has been amended to further recite that the display screen displays sample characteristic curves based on sample analysis performed by a sample analyzer and derived numerical data values based on the sample characteristic curves, and that the means for displaying a derived numerical data adjustment user interface enables a user to select a convenient display location for display of the derived numerical data values so that the derived numerical data values can be displayed on the display screen without interfering with the displayed sample characteristic curves.

Dependent claims 2-4 and 6-13 have been amended to conform to amended indpendent claims 1 and 5.

To obtain a fuller and more comprehensive scope of coverage, new claims 14-20 have been added. Adequate support for the subject matter recited in these claims may be found in the specification as originally filed.

Applicant respectfully submits that claims 1-5 and 7-20 patentably distinguish over the prior art of record.

The graphic display of sample characteristic curves
is routinely accompanied by numerical data displayed and
calculated based on the characteristic curves. For example,
in a Differential Scanning Calorimeter (DSC), the calculation
and display of extrapolated melting start temperatures is
typically performed for each of a plurality of simultaneously-
displayed DSC characteristic curves. The extrapolated melting
start temperature is obtained by determining a point of
intersection of a tangent of a stable region on a lower
temperature side of a DSC curve and a tangent in the vicinity
of the maximum inclination on the lower temperature side of
the curve. For instance, when the DSC curve shown in Fig. 3A
of the application drawings is displayed and the user
determines points "x" on the display screen for stable regions
positioned on both side of an inflection point on the lower
temperature side of the curve, the computer calculates
tangents occurring at these points and displays these
tangents. X-axis coordinate values for points where two
tangents intersect, i.e., temperature values, are then
displayed as numerical values in the vicinity of these
intersecting points. When this derived numerical data is
graphically displayed on a display screen and it is desired to
adjust the position of numerical data values on the display
screen to produce a clean graphical report, it is necessary

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for the user to designate the type of derived numerical data that should be calculated, the characteristic curves for which derived numerical data should be calculated, and parameters needed for calculating the derived numerical data, such as calculation range and calculation point. After the derived numerical data is calculated, adjustment of the displayed data is performed by the user to prevent the data from overlapping the characteristic curves.

However, when adjustment of the position of derived numerical data is desired, the derived numerical data must first be calculated for each individual characteristic curve, and adjustment must then be individually performed for each derived numerical data value. This is a time consuming and burdensome task.

The present invention provides a derived numerical data display adjustment system in which a plurality of characteristic curves and derived numerical data values are displayed, and which reduces the time required to create a desired graphical display.

As recited by amended independent claim 1, for example, the inventive derived data display adjustment system is for a sample analyzer having a computer which enables user selection of a certain characteristic curve from a plurality of displayed characteristic curves to be subjected to derived

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numerical data calculation or derived numerical data position

adjustment. The inventive system comprises a display screen

for displaying the plurality of characteristic curves and a

plurality of derived numerical data values calculated from the

plurality of characteristic curves, means for displaying a

derived numerical data calculation user interface on the

display screen to enable user selection of a derived numerical

data calculation process for calculating a derived numerical

data value from a characteristic curve when the characteristic

curve is selected by the user, and means for displaying a

derived numerical data adjustment user interface on the

display screen to enable user adjustment of a display position

of a derived numerical data value when the derived numerical

data value is selected by the user.

An embodiment of a derived data display adjustment

system of the present invention in connection with DSC curves

is illustrated in Figs. 4A-4F of the application drawings. A

typical characteristic curve shown in Fig. 4A is obtained by

the DSC for each of a plurality of items of data. A typical

display of plural DSC characteristic curves is shown in Fig.

4B. To calculate and display interpolation melting start

temperatures for each characteristic curve, the user must

first select (e.g., click on) a desired DSC curve. Then, the

user must select interpolated temperature calculation from a

menu displayed on the screen. The apparatus then displays an X-Y cursor on the screen. The user then operates the cursor to designate two points for calculation of the interpolated melting start temperature. The analysis apparatus then draws a line connecting the two points and displays the points of intersection with this line, and displays the temperature indicated by the X-coordinate value in a numerical manner in the vicinity of this point of intersection, as shown in Fig. 4C.

As illustrated, the interpolated melting start temperature displayed numerically is displayed in such a manner as to be superimposed with other data curves, making the graph results difficult to see. It is therefore desirable to move the display position of the numerical values prior to executing interpolated temperature calculations for other data.

In accordance with the present invention, the user can select numerical displays for interpolated melting start temperatures on the screen prior to selecting other data curves. This is achieved by user selection of one of the derived numerical data values. Upon selection of one of the numerical data values, the analysis apparatus recognizes this as information indicating that calculation is not possible,

changes over to adjustment mode, and displays a rectangular-shaped image region for the numeric display, as shown in Fig. 4D.

The user can then drag the rectangular region to a desired position so that the numerical display does not overlap with the DSC curve, as shown in Fig. 4E.

In the above operation, derived data calculation and adjustment is completed for one item of data. The procedure is then repeated for other items of data, which results in a graphical display that is easy to see, as shown in Fig. 4F.

In accordance with the present invention recited by amended independent claims 1 and 5 and newly added independent method claim 14, when a characteristic curve is selected, a derived numerical data calculation user interface (such as a cursor) appears on the display. When a derived numerical data value is selected, a derived numerical data adjustment user interface (such as a movable box) is displayed.

Accordingly, a user interface suitable for a selected object is displayed in such a manner that a derived numerical data calculation user interface is displayed when a characteristic curve is selected and a derived numerical data adjustment interface is displayed when the numerical value is selected.

The present invention facilitates repositioning of each derived numerical data value at a location sufficient to distinguish it from the other data to facilitate the generation of an orderly report.

No corresponding structure is disclosed or suggested by the prior art of record.

Barber discloses a method for graphically forming a difference spectrum from a sample spectrum and a reference spectrum on a computer system. The method disclosed by Barber includes the steps of determining an initial difference spectrum equal to the sample spectrum, displaying the initial difference spectrum on the computer display, selecting a data point having an associated wave number in the initial difference spectrum using a pointing device, moving the data point by a measurable amount on the display with the pointing device, determining a scaling factor in response to the measurable amount and to a data point in the reference spectrum having the same associated wave number, scaling each data point in the reference spectrum by the scaling factor to form a scaled reference spectrum, determining the difference spectrum between the sample spectrum and the scaled reference spectrum, and displaying at least a portion of the difference spectrum on the display.

Barber fails to disclose or suggest the display of a derived numerical data calculation user interface (such as a cursor) in response to user selection of a characteristic curve, and the display of a derived numerical data adjustment user interface (such as a movable box) in response to user selection of a derived numerical data value, as required by independent claims 1, 5 and 14.

The present invention generates a derived numerical data calculation user interface when a characteristic curve is selected and a derived numerical data adjustment interface when a numerical value is selected. Barber fails to disclose or suggest any corresponding subject matter.

Tittle was cited as disclosing the display of data traces such that the traces do not interfere with each other. Fawcett was cited as disclosing DSC curves. Thus, the combined teachings of Tittle and Fawcett would not have suggested modifying Barber to generate a derived numerical data calculation user interface when a characteristic curve is selected and a derived numerical data adjustment interface when a numerical value is selected as required by amended independent claims 1 and 5 and newly added independent claim 14.

Accordingly, applicant respectfully submits that claims 1-5 and 7-20 patentably distinguish over the prior art of record.